

REMARKS/ARGUMENTS

Prior to this communication, claims 1 – 41 were pending in the application. In the pending Office action, the Examiner rejected claims 1 – 41. In response, Applicants are amending claims 1, 12, 16, 27, 29, 32, 33, 35, 38 – 40; thus leaving claims 2 – 11, 13 – 15, 17 – 26, 28, 30, 31, 34, 36, 37, and 41 unchanged. Entry of the amendment, and reexamination and reconsideration in view of the amendment and remarks contained herein are respectfully requested.

Applicants would like to thank Examiner Raymond for conducting a telephone conference with Applicants on June 16, 2005 to explain the Examiner's interpretation of the Manenti reference, in particular as it relates to the claim limitations relating to identifying the transducer using the transducer signatures as noted in Section 4 of the Pending Action.

1. Objected Claims

The Office objected to claims 35 and 39 due to informalities.

Particularly, the Office objected to claim 35 "because the phrase 'amplifying the environmental characteristic' is not clear." (Section 1, Pending Action.) Claim 35 has been amended to include "amplifying the signal indicative of the environmental characteristic." Applicants respectfully request that the objection to claim 35 be withdrawn.

The Office also objected to claim 39 "because the phrase 'sigma-delta analog-to-digital converting' is not clear." (Section 2, Pending Action.) Claim 39 has been amended to include, among other things, "converting the environmental characteristic from the analog format into a digital format using a sigma-delta conversion." Applicants respectfully request that the objection to claim 39 be withdrawn.

2. Claim Rejections

Claims 1 – 28 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,475,384 ("Manenti").

Manenti discloses a remote addressable device (“RAD”) that includes a sensor to measure physical quantities, a power supply section, a clock section, a timing section, an acquisition circuit, and a conversion circuit. The acquisition circuit includes a microcontroller, a memory to store some compensation parameters used in a calibrating process, some analog to digital converters, a temperature sensor to convert a temperature value into a voltage value, and frequency generating means to generate a signal to be transmitted on a phone line through the power supply section. (Col. 3, lines 44 – 60.)

The Office asserted that Manenti teaches a sensor assembly having a processor that is “coupled to the memory and configured to store an adaptive algorithm (claims 1 and 16: see Figure 1: Controller 11 and also col. 60 – 62: The Examiner notes that compensation and adaptive are synonymous), to identify the transducer using the transducer signatures (claims 1 and 16: see col. 2, lines 50 – 53).” (Section 4, pages 2 – 3, Pending Action.)

Applicants respectfully disagree.

The claimed invention specifies a system that allows a universal adapter to be connected to any one of a plurality of different types (e.g., pH, oxidation reduction potential (“ORP”), dissolved oxygen, etc.) of transducers. (Lines 16 -21, page 4, Pending Application.) The use of transducer signatures by the processor allows it to (among other things) recognize the type of transducer, calibrate for that transducer and automatically organize and process signals from that particular transducer, without any need to reprogram or recalibrate the system manually.

Manenti teaches a remote controlled sensing system that includes a computer that controls and communicates with a plurality of addressable transducers. (Col. 1, lines 19 – 20.) Particularly, each of the addressable transducers is “marked, when parallel connected to a line, through an address (number 1 to 127 set thereon in a binary configuration of bridges.” (Col. 1, lines 46 – 48.) Furthermore, Manenti teaches that the circuitry “includes also a serial interface 18 connected to the microcontroller 11 and intended to be used during the calibration for communicating with the computer handling all the process.” (Col. 4, lines 24 – 27.)

The system of Manenti et al. allows remote addressing of a collection of transducers all of the same type. But there is nothing in Manenti et al. that teaches or suggests the system that

allows automatic recognition of a particular type of transducer using pre-programmed transducer signatures.

In other words, the computer system of Manenti communicates with the same type of remotely addressable transducers (that may have different calibration parameters) using different addresses of the addressable transducers. However, addressing each of the transducers using its address with the computer is different from the processor being operable to “identify the transducer using the transducer signatures,” and “to process the environmental characteristic using the transducer signatures and the adaptive algorithm,” as required by claim 1, even if Applicants were to assume that the transducer signatures are the addresses. That is, the remote controlled sensing system does not know which one of the addressable transducers to address without the computer explicitly deciding which particular addressable transducer to address. Furthermore, the RAD transducer does not measure or transmit without the computer addressing a particular addressable transducer.

As such, Manenti et al. do not teach or suggest a sensor assembly comprising, among other things, a memory element coupled to the transducer and configured to store a plurality of transducer signatures, each transducer signature identifying a transducer type; or a processor to identify the transducer type using the transducer signature; or a processor that processes the environmental characteristic using the transducer signatures.

Therefore, independent claim 1 is allowable. Dependent claims 2 – 15 also include patentable subject matter for at least the reasons set forth above with respect to claim 1.

Independent claim 16 requires, among other things, an “adapting body having a processor configured to store an adaptive algorithm, to identify the transducer type using the transducer signatures, and to process the environmental characteristics using the transducer signatures and the adaptive algorithm to generate an output representative of the environmental characteristic.” For reason discussed above with respect to claim 1, Manenti does not teach or suggest a processor “to identify the transducer type using the transducer signatures, and to process the environmental characteristics using the transducer signatures.” Therefore, independent claim 16 is also allowable. As a consequence, dependent claims 17 – 28 also include patentable subject matter.

Claims 29 – 41 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Manenti in view of U.S. Patent Application No. 2003/0187606 (“Curry”).

Curry discloses a combustionless British Thermal Unit (“BTU”) meter that utilizes nuclear magnetic resonance (“NMR”) spectroscopy to measure the concentrations of the component parts of a heterogeneous gas. Measurement of the gas component concentrations allow for subsequent calculations of BTU/Cubic Foot (“BTU/CF”) from the measured component parts. Static pressure and temperature are also measured. Gas concentrations are preferably combined with static pressure and temperature, to calculate other characteristics of BTU/Pound (“BTU/lb”), molar mass, relative density, and absolute gas density. A method for measuring heat production is also disclosed. (Abstract, Curry.)

To establish a *prima facie* case of obviousness, three basic criteria must be met. *M.P.E.P.* § 706.02(j).

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior[-]art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be both found in the prior art, not in applicant’s disclosure.

Id. See also *In re Rougget*, 149 F.3d 1350, 1355 (Fed. Cir. 1998) (“To reject claims in an application under section 103, the Examiner must show an unrebutted *prima facie* case of obviousness. In the absence of a proper *prima facie* case of obviousness, an applicant who complies with the other statutory requirements is entitled to a patent.”)

Particularly, the Office asserted that Manenti teaches “all of the features of the claimed invention, except a method of conditioning the environmental characteristic using the processor with firmware.” (Section 7, page 8, Pending Action.) As amended, the subject matter of claim 29 is not obvious. Amended claim 29 requires, among other things, “processing the transducer signatures to identify the transducer at the processor.” As noted above with respect to claim 1, Manenti does not teach or suggest a transducer head is coupled to a transducer body; or a memory storing a plurality of transducer signatures; or retrieving a plurality of transducer

signatures from the memory; or processing the transducer signatures to identify the transducer at the processor; or sensing a signal indicative of the environmental characteristic using the transducer; or conditioning the signal indicative of the environmental characteristic using the processor with an adaptive firmware stored in the transducer body and the processed signatures; or outputting the conditioned signal indicative of the environmental characteristic. Therefore, Manenti does not teach of suggest all the limitations in claim 29.

Accordingly, independent claim 29 is allowable. Dependent claims 30 – 41 are dependent from claim 29. Accordingly, these claims also include patentable subject matter.

CONCLUSION

Entry of the Amendment and allowance of claims 1 – 41 are respectfully requested. The undersigned is available for telephone consultation at any time during normal business hours.

Respectfully submitted,



Thomas A. Miller
Reg. No. 36,871

Docket No.: 013469-9001-00
Michael Best & Friedrich LLP
100 East Wisconsin Avenue
Suite 3300
Milwaukee, Wisconsin 53202-4108
414.271.6560
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